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EXAMINER	
TRAN, DIEM T	

ART UNIT	PAPER NUMBER
3748	

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/831,207	PAGE ET AL.	
	Examiner	Art Unit	
	Diem Tran	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *34,35,53 and 54* is/are allowed.

6)☒ Claim(s) *1-14,19-30,32,33,36-41,45-49, and 52* is/are rejected.

7)☐ Claim(s) *15-18,31,42-44,50 and 51* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to the amendment filed on 7/29/04. The Applicant's arguments have been considered and are deemed persuasive in-part, however, the new non-final rejection is set forth below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 36-38, 45-47, 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Cleary (US Patent 5,567,390).

Regarding claims 36, 37, 38, 46, 47, Cleary discloses a method for processing a fluid stream, comprising:

preheating the fluid stream by heat exchange using an exiting treated fluid stream; and oxidizing carbon monoxide and hydrocarbons, and reducing nitrogen oxides present in the preheated fluid stream, to produce the exiting treated fluid stream (see Figure 4, col. 7, lines 3+).

Regarding claims 45, 52, Cleary further discloses preheating the fluid stream using an external heat source prior to preheating using the exiting treated fluid stream (see col. 1, lines 39-42).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 11-13, 19, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cleary (US Patent 5,326,537) in view of Zirkel (US Patent 5,335,492).

Regarding claims 1, 11-13, 19, Cleary discloses an apparatus for processing a fluid stream, comprising:

a heat exchanger having first and second spaced-apart walls that define an inlet passage and an outlet passage for the fluid stream, wherein the walls are configured to transfer heat from the outlet passage to the inlet passage (see Figure 4); and an oxidation catalyst integrally connected to the heat exchanger to oxidize carbon monoxide and hydrocarbons, and positioned to transmit the fluid stream from the inlet passage to the outlet passage (see col. 8, lines 3-17, 64-67); however, fails to disclose a diesel particulate filter for collecting and oxidizing particulate matter present in the fluid stream. Zirkel teaches that it is conventional in the art, to utilize a diesel particulate filter (1) for collecting and oxidizing particulate matter present in the fluid stream (see Figure 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Zirkel in the Cleary device, since the use thereof would have removed the particulate matter in the exhaust gas.

Regarding claims 2-4, Zirkel further teaches that the diesel particulate filter is a ceramic wall-flow particulate filter comprises a material of metal (see Figure 2, abstract, lines 1-5).

Regarding claim 5, the modified Cleary apparatus discloses an oxidation catalyst; however, fails to disclose that the catalyst comprises a material selected from the group of platinum, palladium, and ceramic oxide.

It is well known to those with ordinary skill in the art that an oxidation catalyst comprises at least one of Pt, Pd. Therefore, such disclosure by Zirkel is notoriously well known in the art so as to be proper for official notice.

Regarding claim 20, Cleary further discloses that the first and second spaced-apart walls have a spiral configuration (see Figure 4).

Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cleary (US Patent 5,326,537) in view of Zirkel (US Patent 5,335,492) as applied to claim 1 above, and further in view of Schluter (US Patent 5,814,284).

Regarding claims 6-8, the modified Cleary system discloses all the claimed limitations as applied to claim 1 above, however, fails to disclose a lean-NOx catalyst located upstream of the diesel oxidation catalyst wherein the lean-NOx catalyst is configured to reduce nitrogen oxides in the stream. Schluter teaches that it is conventional in the art, to utilize a NOx catalyst to reduce NOx in the exhaust gas (see col. 4, lines 29-34).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have used the NOx catalyst taught by Schluter in the modified Cleary apparatus, since the use thereof would have eliminated harmful NOx emission in the exhaust gas.

The modified Cleary apparatus discloses the claimed invention except for locating the NOx catalyst upstream of the oxidation catalyst. It would have been obvious to one having ordinary skill in the art at the time the invention was made to locate the NOx catalyst at the location upstream of the oxidation catalyst in the modified Cleary apparatus, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Regarding claims 9-10, Schluter teaches a NOx catalyst, but fails to disclose that said NOx catalyst has a monolithic structure.

It is well known to those with ordinary skill in the art that NOx catalyst has a monolithic structure, is notoriously well known in the art so as to be proper for official notice.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cleary (US Patent 5,326,537) in view of Zirkel (US Patent 5,335,492) as applied to claim 1 above, and further in view of Anguil (US Patent 5,143,700).

The modified Cleary apparatus disclose all the claimed limitations as discussed in claim 1 above, however, fails to disclose a fuel injector located and configured to inject hydrocarbons into the inlet passage. Anguil teaches that it is conventional in the art, to utilize a fuel injector located and configured to inject hydrocarbons into the inlet passage (see col. 2, lines 63-68).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Anguil in the modified Cleary apparatus, since the use thereof would have improved the efficiency of the emission control system.

Claims 21-27, 32, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cleary (US Patent 5,326,537) in view of Schluter (US Patent 5,814,284).

Regarding claims 21-25, 32, Cleary discloses an apparatus for processing a fluid stream, comprising:

a heat exchanger having first and second spaced-apart walls that define an inlet passage and an outlet passage for the fluid stream, wherein the walls are configured to transfer heat from the outlet passage to the inlet passage (see Figure 4); a diesel oxidation catalyst integrally connected to the heat exchanger, between the inlet and outlet passage, wherein the diesel oxidation catalyst is configured to oxidize carbon monoxide and hydrocarbons in the fluid stream; however, fails to disclose a lean-NOx catalyst located upstream of the diesel oxidation catalyst wherein the lean-NOx catalyst is configured to reduce nitrogen oxides in the stream. Schluter teaches that it is conventional in the art, to utilize a NOx catalyst to reduce NOx in the exhaust gas (see col. 4, lines 29-34).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have used the NOx catalyst taught by Schluter in the Cleary device, since the use thereof would have eliminated harmful NOx emission in the exhaust gas.

Cleary discloses the claimed invention except for locating the NOx catalyst upstream of the oxidation catalyst. It would have been obvious to one having ordinary skill in the art at the time the invention was made to locate the NOx catalyst at the location upstream of the oxidation catalyst in the Cleary apparatus, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Regarding claims 26, 27, Schluter teaches a NOx catalyst, but fails to disclose that said NOx catalyst has a monolithic structure.

It is well known to those with ordinary skill in the art that NOx catalyst has a monolithic structure, is notoriously well known in the art so as to be proper for official notice.

Regarding claim 33, Cleary further discloses that the first and second spaced apart walls have a spiral configuration (see Figure 4).

Claims 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cleary (US Patent 5,326,537) in view of Schluter (US Patent 5,814,284) as applied to claim 21 above, and further in view of Anguil (US Patent 5,143,700).

Regarding claims 28-30, the modified Cleary apparatus disclose all the claimed limitations as discussed in claim 21 above, however, fails to disclose a temperature sensor and a controller, responsive to the temperature signal, for controlling the rate at which the fuel injector injects hydrocarbons into the inlet passage. Anguil teaches that it is conventional in the art, to utilize a temperature sensor at a position adjacent to the oxidation catalyst and a controller, responsive to the temperature signal, for controlling the rate at which the fuel injector injects hydrocarbons into the inlet passage (see col. 2, lines 63-68).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Anguil in the modified Cleary apparatus, since the use thereof would have improved the fuel consumption for reducing harmful emissions in the exhaust gas.

Claims 39, 40, 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cleary (US Patent 5,567,390) in view of Schluter (US Patent 5,814,284).

Regarding claim 39, 40, 48, Cleary discloses all the claimed limitations as discussed in claims 36, 46 above, however, fails to disclose reducing nitrogen oxides present in the preheated fluid stream using a lean-NOx catalyst. Schluter teaches that it is conventional in the art, to reduce nitrogen oxides present in the preheated fluid stream using a lean-NOx catalyst (see Figure 4, col. 4, lines 29-32).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Schluter in the Cleary device, since the use thereof would have improved the NOx purification efficiency of the catalyst.

Claims 41, 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cleary (US Patent 5,567,390) as applied to claims 36, 46 above, in view of Anguil (US Patent 5,143,700).

Regarding claims 41, 49, Cleary disclose all the claimed limitations as discussed in claims 36, 46 above, however, fails to disclose a fuel injector located and configured to inject hydrocarbons into the inlet passage. Anguil teaches that it is conventional in the art, to utilize a fuel injector located and configured to inject hydrocarbons into the inlet passage (see col. 2, lines 63-68).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Anguil in the Cleary apparatus, since the use thereof would have improved the efficiency of the emission control system.

Allowable Subject Matter

Claims 15-18, 31, 42-44, 50, 51 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 34, 35, 53-54 are allowed.

Response to Arguments

Applicant's arguments filed on 7/29/04 have been fully considered but they are moot in view of a new ground(s) of rejection. The Applicant argued that the Cleary patent or the Zirkel patent does not teach or suggest "a particulate filter ...configured to oxidize carbon monoxide and hydrocarbons and to collect and oxidize particulate matter present in the fluid stream". The Examiner respectfully disagrees, since the Cleary patent discloses an oxidation catalyst having a function of oxidizing carbon monoxide and hydrocarbons (see col. 8, lines 3-17, 64-67) and Zirkel patent teaches the use of a particulate filter (1) for collecting and oxidizing particulate matter present in the fluid stream (see Figure 1).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the

applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

Any inquiry concerning this communication from the examiner should be directed to Examiner Diem Tran whose telephone number is (571)272-4866. The examiner can normally be reached on Monday -Friday from 8:30 a.m.- 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (571)272-4859. The fax number for this group is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Diem Tran
Patent Examiner
Art unit 3748

DT
November 26, 2004

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